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SEQUENCE LISTING

<110> Suzano Papel E Cellulose S.A.
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Fundacao De Amaparo A Pesquisa Do Estado De Sao Paulo
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Labate, Monica Teresa Venesiano
Bertolo, Ana Leticia
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Gunta, Gutmanis
Maria, Faraldo Inez Fernandes

<120> METHOD FOR THE GENETIC MODULATION OF THE BIOSYNTHESIS OF
HEMICELLULOSES, CELLULOSE AND URONIC ACIDS IN PLANT CELLS USING
GENE EXPRESSION CASSETTES

<130> 066281-0014

<140> 10586875

<141> 2008-02-25

<160> 4

<170> PatentIn version 3.4

<210> 1

<211> 480

<212> PRT

<213> Glycine max

<400> 1

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			20					25					30		

Asp	Ile	Ser	Lys	Ser	Arg	Ile	Ala	Ala	Trp	Asn	Ser	Asp	Gln	Leu	Pro
		35						40				45			

Ile	Tyr	Glu	Pro	Gly	Leu	Asp	Gly	Val	Val	Lys	Gln	Cys	Arg	Gly	Lys
	50					55					60				

Asn	Leu	Phe	Phe	Ser	Thr	Asp	Val	Glu	Lys	His	Val	Phe	Glu	Ala	Asp
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Ile	Val	Phe	Val	Ser	Val	Asn	Thr	Pro	Thr	Lys	Thr	Gln	Gly	Leu	Gly
					85					90					95

Ala Gly Lys Ala Ala Asp Leu Thr Tyr Trp Glu Ser Ala Ala Arg Met
100 105 110

Ile Ala Asp Val Ser Lys Ser Asp Lys Ile Val Val Glu Lys Ser Thr
115 120 125

Val Pro Val Lys Thr Ala Glu Ala Ile Glu Lys Ile Leu Thr His Asn
130 135 140

Ser Lys Gly Ile Lys Phe Gln Ile Leu Ser Asn Pro Glu Phe Leu Ala
145 150 155 160

Glu Gly Thr Ala Ile Lys Asp Leu Phe Asn Pro Asp Arg Val Leu Ile
165 170 175

Gly Gly Arg Glu Thr Pro Glu Gly Gln Lys Ala Ile Gln Thr Leu Lys
180 185 190

Asp Val Tyr Ala Gln Trp Val Pro Glu Glu Arg Ile Leu Thr Thr Asn
195 200 205

Leu Trp Ser Ala Glu Leu Ser Lys Leu Ala Ala Asn Ala Phe Leu Ala
210 215 220

Gln Arg Ile Ser Ser Val Asn Ala Met Ser Ala Leu Cys Glu Ala Thr
225 230 235 240

Gly Ala Asn Val Gln Gln Val Ser Tyr Ser Val Gly Thr Asp Ser Arg
245 250 255

Ile Gly Pro Lys Phe Leu Asn Ala Ser Val Gly Phe Gly Gly Ser Cys
260 265 270

Phe Gln Lys Asp Ile Leu Asn Leu Val Tyr Ile Cys Glu Cys Asn Gly
275 280 285

Leu Pro Glu Val Ala Glu Tyr Trp Lys Gln Val Ile Lys Ile Asn Asp
290 295 300

Tyr Gln Lys Ser Arg Phe Val Asn Arg Val Val Ala Ser Met Phe Asn
305 310 315 320

Thr Val Ser Asn Lys Lys Ile Ala Ile Leu Gly Phe Ala Phe Lys Lys

325

330

335

Asp Thr Gly Asp Thr Arg Glu Thr Pro Ala Ile Asp Val Cys Gln Gly
340 345 350

Leu Leu Gly Asp Lys Ala Asn Leu Ser Ile Tyr Asp Pro Gln Val Thr
355 360 365

Glu Asp Gln Ile Gln Arg Asp Leu Ser Met Asn Lys Phe Asp Trp Asp
370 375 380

His Pro Ile His Leu Gln Pro Thr Ser Pro Thr Thr Val Lys Lys Val
385 390 395 400

Ser Val Val Trp Asp Ala Tyr Glu Ala Thr Lys Asp Ala His Gly Leu
405 410 415

Cys Ile Leu Thr Glu Trp Asp Glu Phe Lys Thr Leu Asp Tyr Gln Lys
420 425 430

Ile Phe Asp Asn Met Gln Lys Pro Ala Phe Val Phe Asp Gly Arg Asn
435 440 445

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465 470 475 480

<210> 2

<211> 346

<212> PRT

<213> Pisum sativum

<400> 2

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35 40 45

Val	Asp	Arg	Leu	Met	Gln	Asn	Glu	Lys	Asn	Glu	Val	Ile	Val	Ala	Asp	50	55	60
Asn	Tyr	Phe	Thr	Gly	Ser	Lys	Asp	Asn	Leu	Lys	Lys	Trp	Ile	Gly	His	65	70	75
Pro	Arg	Phe	Glu	Leu	Ile	Arg	His	Asp	Val	Thr	Glu	Pro	Leu	Met	Ile	85	90	95
Glu	Val	Asp	Gln	Ile	Tyr	His	Leu	Ala	Cys	Pro	Ala	Ser	Pro	Ile	Phe	100	105	110
Tyr	Lys	Tyr	Asn	Pro	Val	Lys	Thr	Ile	Lys	Thr	Asn	Val	Ile	Gly	Thr	115	120	125
Leu	Asn	Met	Leu	Gly	Leu	Ala	Lys	Arg	Val	Gly	Ala	Arg	Ile	Leu	Leu	130	135	140
Thr	Ser	Thr	Ser	Glu	Val	Tyr	Gly	Asp	Pro	Leu	Glu	His	Pro	Gln	Pro	145	150	155
Glu	Thr	Tyr	Trp	Gly	Asn	Val	Asn	Pro	Ile	Gly	Val	Arg	Ser	Cys	Tyr	165	170	175
Asp	Glu	Gly	Lys	Arg	Val	Ala	Glu	Thr	Leu	Met	Phe	Asp	Tyr	His	Arg	180	185	190
Gln	His	Gly	Ile	Glu	Ile	Arg	Val	Ala	Arg	Ile	Phe	Asn	Thr	Tyr	Gly	195	200	205
Pro	Arg	Met	Asn	Ile	Asp	Asp	Gly	Arg	Val	Val	Ser	Asn	Phe	Ile	Ala	210	215	220
Gln	Ala	Leu	Arg	Asp	Glu	Ser	Leu	Thr	Val	Gln	Ser	Pro	Gly	Thr	Gln	225	230	235
Thr	Arg	Ser	Phe	Cys	Tyr	Val	Ser	Asp	Leu	Val	Asp	Gly	Leu	Ile	Arg	245	250	255
Leu	Met	Gly	Gly	Ser	Asp	Thr	Gly	Pro	Ile	Asn	Leu	Gly	Asn	Pro	Gly	260	265	270

Glu Phe Thr Met Leu Glu Leu Ala Glu Thr Val Lys Glu Leu Ile Asn
275 280 285

Pro Asn Val Glu Ile Lys Ile Val Glu Asn Thr Pro Asp Asp Pro Arg
290 295 300

Gln Arg Lys Pro Asp Ile Thr Lys Ala Gln Glu Leu Leu Gly Trp Glu
305 310 315 320

Pro Lys Val Lys Leu Arg Asp Gly Leu Pro Leu Met Glu Gly Asp Phe
325 330 335

Arg Leu Arg Leu Gly Ile Glu Lys Asn Asn
340 345

<210> 3
<211> 282
<212> PRT
<213> Sus scrofa

<400> 3

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Glu Ala Ala Lys Asp Lys Gly Ser Phe Arg Asn Tyr Thr Ser Gly Pro
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Leu Leu Asp Arg Val Phe Arg Thr Tyr Lys Leu Met His Thr Trp Gln
35 40 45

Thr Val Asp Phe Val Arg Lys Lys His Ala Gln Phe Gly Gly Phe Ser
50 55 60

Tyr Lys Arg Met Thr Val Leu Glu Ala Val Asp Met Leu Asp Gly Leu
65 70 75 80

Val Asp Glu Ser Asp Pro Asp Val Asp Phe Pro Asn Ser Phe His Ala
85 90 95

Phe Gln Thr Ala Glu Gly Ile Arg Lys Ala His Pro Asp Lys Asp Trp
100 105 110

Phe His Leu Val Gly Leu Leu His Asp Leu Gly Lys Val Leu Val Leu
115 120 125

Ala Gly Glu Pro Gln Trp Ala Val Val Gly Asp Thr Phe Pro Val Gly
130 135 140

Cys Arg Pro Gln Ala Ser Val Val Phe Cys Asp Ser Thr Phe Gln Asp
145 150 155 160

Asn Pro Asp Leu Gln Asp Pro Val Tyr Ser Thr Glu Leu Gly Met Tyr
165 170 175

Gln Pro His Cys Gly Leu Glu Asn Ala Leu Met Ser Trp Gly His Asp
180 185 190

Glu Tyr Met Tyr Gln Met Met Lys Phe Asn Lys Phe Ser Leu Pro Gly
195 200 205

Glu Ala Phe Tyr Ile Ile Arg Phe His Ser Phe Tyr Pro Trp His Thr
210 215 220

Gly Gly Asp Tyr Arg Gln Leu Cys Asn Glu Gln Asp Leu Ala Met Leu
225 230 235 240

Pro Trp Val Gln Glu Phe Asn Lys Phe Asp Leu Tyr Thr Lys Gly Ser
245 250 255

Asp Met Pro Asp Val Asp Glu Leu Arg Pro Tyr Tyr Gln Gly Leu Ile
260 265 270

Asp Lys Tyr Cys Pro Gly Val Leu Cys Trp
275 280

<210> 4
<211> 477
<212> PRT
<213> Solanum tuberosum

<400> 4

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20 25 30

Lys Ser Gly Phe Ile Asn Leu Val Gly Arg Tyr Leu Ser Gly Glu Ala
35 40 45

Gln His Ile Asp Trp Ser Lys Ile Gln Thr Pro Thr Asp Glu Val Val
50 55 60

Val Pro Tyr Asp Lys Leu Ala Pro Leu Ser Glu Asp Pro Ala Glu Thr
65 70 75 80

Lys Lys Leu Leu Asp Lys Leu Val Val Leu Lys Leu Asn Gly Gly Leu
85 90 95

Gly Thr Thr Met Gly Cys Thr Gly Pro Lys Ser Val Ile Glu Val Arg
100 105 110

Asn Gly Leu Thr Phe Leu Asp Leu Ile Val Lys Gln Ile Glu Ala Leu
115 120 125

Asn Ala Lys Phe Gly Cys Ser Val Pro Leu Leu Leu Met Asn Ser Phe
130 135 140

Asn Thr His Asp Asp Thr Leu Lys Ile Val Glu Lys Tyr Ala Asn Ser
145 150 155 160

Asn Ile Asp Ile His Thr Phe Asn Gln Ser Gln Tyr Pro Arg Leu Val
165 170 175

Thr Glu Asp Phe Ala Pro Leu Pro Cys Lys Gly Asn Ser Gly Lys Asp
180 185 190

Gly Trp Tyr Pro Pro Gly His Gly Asp Val Phe Pro Ser Leu Met Asn
195 200 205

Ser Gly Lys Leu Asp Ala Leu Leu Ala Lys Gly Lys Glu Tyr Val Phe
210 215 220

Val Ala Asn Ser Asp Asn Leu Gly Ala Ile Val Asp Leu Lys Ile Leu
225 230 235 240

Asn His Leu Ile Leu Asn Lys Asn Glu Tyr Cys Met Glu Val Thr Pro
245 250 255

Lys Thr Leu Ala Asp Val Lys Gly Gly Thr Leu Ile Ser Tyr Glu Gly

260

265

270

Lys Val Gln Leu Leu Glu Ile Ala Gln Val Pro Asp Glu His Val Asn
275 280 285

Glu Phe Lys Ser Ile Glu Lys Phe Lys Ile Phe Asn Thr Asn Asn Leu
290 295 300

Trp Val Asn Leu Ser Ala Ile Lys Arg Leu Val Glu Ala Asp Ala Leu
305 310 315 320

Lys Met Glu Ile Ile Pro Asn Pro Lys Glu Val Asp Gly Val Lys Val
325 330 335

Leu Gln Leu Glu Thr Ala Ala Gly Ala Ala Ile Lys Phe Phe Asp Arg
340 345 350

Ala Ile Gly Ala Asn Val Pro Arg Ser Arg Phe Leu Pro Val Lys Ala
355 360 365

Thr Ser Asp Leu Leu Leu Val Gln Ser Asp Leu Tyr Thr Leu Thr Asp
370 375 380

Glu Gly Tyr Val Ile Arg Asn Pro Ala Arg Ser Asn Pro Ser Asn Pro
385 390 395 400

Ser Ile Glu Leu Gly Pro Glu Phe Lys Lys Val Ala Asn Phe Leu Gly
405 410 415

Arg Phe Lys Ser Ile Pro Ser Ile Ile Asp Leu Asp Ser Leu Lys Val
420 425 430

Thr Gly Asp Val Trp Phe Gly Ser Gly Val Thr Leu Lys Gly Lys Val
435 440 445

Thr Val Ala Ala Lys Ser Gly Val Lys Leu Glu Ile Pro Asp Gly Ala
450 455 460

Val Ile Ala Asn Lys Asp Ile Asn Gly Pro Glu Asp Ile
465 470 475